

The Evolution of Portable Gas Detection

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The evolution of the portable gas detector can be likened to that of the mobile phone, which started its life as a large and cumbersome object requiring an even larger battery pack. These archaic telecom ancestors look almost alien compared with today's Smart phones that offer us so much more than the ability to make a call on the move. Portable gas detection has enjoyed a similar progression.

One of the first portables produced by Honeywell Analytics (known as Sieger at the time), was called Model 1650; a flammable portable gas detector weighing in at a weighty 3 pounds (1.36 kg) with equally oversized dimensions of 210mm high x 110mm wide x 60mm deep to house its giant battery. Today portable devices can fit snugly in the palm of your hand and weigh grams rather than kilograms; in fact they can offer so much more than their early predecessors like Model 1650.

Back to the beginning



The very first portable gas detectors were in fact entirely organic. Canaries were taken into mines to check for Carbon Monoxide (CO) and Methane (CH₄) gases. Canaries were chosen over other birds owing to their fondness for singing; if gas was found, the canary would stop singing and eventually die, providing a window of opportunity for the miner to leave and get to safety.

Luckily the emergence of electronics and other technologies meant that canaries were replaced as gas detectors, in favour of more reliable inorganic instruments.

The very first portable gas detectors were designed for use in mining applications. In fact Sieger (now known as Honeywell Analytics), was one of the first manufacturers to bring a portable device to market. The unit, known as the Portable Explosive Gas Detector, was launched in the early 1970s and detected flammable gas, displaying readings via a swing meter.

The advent of new applications requiring gas detection, such as oil and gas production and industrial applications, catalysed the emergence of additional portable devices into the marketplace featuring the detection of flammable gas and Hydrogen Sulphide (H₂S).

Momentum started gaining in the 1980s and 1990s; not least of all thanks to the technology boom during this period, which helped to drive down essential component costs, allowing manufacturers to scale down the size of units and also add new functional aspects. This can be seen by models like the revolutionary 3700 3-in-1 gas detector from Sieger, released in 1984; one of the first multi-gas portable monitors offering the detection of flammable gases, H₂S and also Oxygen. This product featured a digital indication of concentration, making a move away from the less reliable analogue meters of the past. The portable units from this era also featured sensors integrated into the devices themselves, where previously they were likely to be housed at the end of an accompanying probe.

Disposable culture

Technology often acts as a mirror to not only specific market needs but also culture itself. This can be seen by the emergence of the disposable portable gas detector in the mid 1990s. It seems so apt that such an innovation would be born from this period of mass commercialism and excess; abundance in the newly emerging mass markets brought not only diversity but also the concept of a use and replace philosophy to the people. The merits of disposable devices are clear to see; many businesses were delighted at the prospect of being able to cut device maintenance costs by using them over serviceable units.

More manufacturers entered the marketplace during this period

and BW Technologies (now known as BW Technologies by Honeywell), was established in 1987 as a manufacturer of cutting-edge gas detection solutions to capitalise on the growing gas detection market. Within 10 years the Canadian brand was fast becoming recognised for their acclaimed portable range. BW Technologies made a massive impact in the portables marketplace in 1995 when they released ToxyClip, the World's first disposable portable gas detector offering single gas protection from Oxygen.

Disposable devices are still as popular as ever today, and thanks to reduced production costs, they are now able to deliver more functionality and value than their pioneering predecessors ever could. This can be seen by the popularity of BW Technologies by Honeywell's GasAlertClipExtreme single gas disposable portable today. A trend that is acting to counter the popularity of disposables is the onus on companies to recycle as part of new legislated initiatives. This makes it harder and more costly to dispose of units, causing some organisations to opt for serviceable portables instead.

Innovations and key functionality

In tandem with the disposable device innovations, there was an equal focus on improving serviceable portable devices. The Impact range of portable multi-gas monitors by Neotronics (now known as Honeywell Analytics), featured the World's first "plug and play" pre-calibrated sensor cartridges. This greatly improved the user experience in terms of maintaining the device, making it easy to swap over sensor cartridges and remove the need for manual calibration of each sensor.

Just like our mobile phones, portable units have also got smaller; a welcome aspect for engineers who need to wear them for many hours at a time. In 2001, BW Technologies launched GasAlertMicro; the World's smallest multi-gas detector weighing in at a feather light 211 grams, with micro dimensions of 60mm high x 100mm wide x 33mm deep. Its amazing popularity proved the point that when it comes to portable gas detection, small is definitely good in the eyes of the market.

Other key innovations have included the emergence of automatic docking stations that can test portable devices and download data. Devices like MicroDock II - BW Technologies by Honeywell's automatic test and data logging



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station – offer single button, minimal training solutions to bump testing and data logging. When combined with its accompanying software, Fleet Manager II, MicroDock II can also help to greatly simplify fleet management tasks by allowing the automatic generation of reports and even sending out automatic email notifications to multiple recipients to remind of a need to calibrate a device.

The desire to reduce costs has been evident since the commencement of commercialism. In the modern World of economic and financial uncertainty we now inhabit, reducing operating costs is perhaps more of a consideration than ever before; one way to maximise profitability in recessionary climates is the reduction of operational costs. Aspects like multi-gas simultaneous monitoring capabilities, auto-calibration functionality, automatic data logging and plug and play pre-calibrated sensors are all popular aspects and can help to reduce the ongoing cost of gas detection by up to 40% over a three year operating life. This impressive reduction is without doubt a key reason why these aspects are so popular with a wide diversity of customers globally.

Portable gas detection today

The latest product to be launched by BVV Technologies by Honeywell highlights a welcome evolution in portable gas detection; the fact that you can have it all... and at a reduced cost of ownership. This too is reflective of today's global culture, where mass market competition has encouraged manufacturers to innovate more value for less cost in an effort to stand out above the competition and gain market share.

GasAlertMicroClip XT is the smallest, most lightweight and simplest 4-gas portable gas detector in its class, providing users with a comfortable, unobtrusive and easy to use solution to simultaneous multiple gas detection.

Despite its small and sleek design and low cost, GasAlertMicroClip XT offers superior detection of up to four classes of gases (H₂S, CO, O₂ and combustibles), without the compromise of dual sensor technology; unlike many comparable units on the market.

The device's one-button operation with intuitive interface ensures minimal training is required - an increasingly important aspect to today's customer.

Safety revolution

We are living in an evermore safety conscious World and the development and refinement of legislation and its effect on insurance clauses has impacted on all industries and applications. This trend is highlighted by the emergence of devices like GasAlertMicroClip XT that features BVV Technologies by Honeywell's acclaimed IntelliFlash™ technology. IntelliFlash™ provides a visual indication of device compliance, delivering an instantly accessible indication to both supervisors and operators of a device's compliance to site standards and ensures non-compliant devices are easily

identifiable; this also helps to improve operator safety and maximise device compliance on site; important aspects for today's fleet managers and safety supervisors.

The next evolutionary steps

So what does the future hold for portable gas detection? As always, demand is the agent of change; the needs of those purchasing portable gas detectors will ultimately drive tomorrow's gas detection innovations, as manufacturers respond to the needs of customers and add more value to the products they deliver.

An examination of current trends provides guidance as to where the biggest innovations in portable gas detection might be; a key trend within the industry is the drive towards enhanced safety and performance. It is likely that there will be some harmonisation across performance standards in an effort to provide tighter controls over how portable products are developed and produced.

Wireless technology will also be instrumental in delivering enhanced safety and helping to reduce ongoing costs. Wireless technologies not only remove the need for wiring, but facilitate automatic communications that can greatly benefit businesses and offer more visibility.

Aspects now included in everyday devices like the 3G iPhone will also find their way into the portable gas detectors of the future; these are likely to include the addition of GPS, which will allow total visibility on portable device location. The Smart Phone revolution is already helping to reduce the costs associated with components that deliver these new functions and communication aspects, making them more viable for manufacturers to integrate into future devices they produce.

There are also plans for devices to include motion sensors so they can alert to a "man down" situation, should a user fall to the ground, further improving safety and ensuring that unforeseen incidents are dealt with quickly.

Aside from the introduction of new technology currently utilised in other industries (such as telecommunications), the future of portable gas detection will also include evolutions in current aspects that are already popular. More gases will be able to be detected by a single device and sensors will become more sensitive and less prone to cross-interference issues.

Developments in calibration and maintenance will also allow operators to limit the need to undertake non-core activities like equipment maintenance. As regulations tighten regarding portable device testing, automatic test stations like MicroDock II from BVV Technologies by Honeywell will become evermore prevalent and integrate additional functional aspects that will enable them to bring more value to the user experience.

Following the trend being seen in the fixed gas detection marketplace, portables will also move towards IR detection for Hydrocarbon and flammable gas detection, rather than catalytic bead. IR offers fail-to-safety operation so as IR costs fall, more and more portable devices will integrate this sensing principle.



Multi-gas monitors will become ubiquitous, as the cost of detecting multiple hazards is reduced through a fall in component costs. It is expected that advances in technology will allow more freedom for the user in terms of defining how monitoring is carried out by the device (continuous monitoring of hazards) and how data can be displayed.

As our technological maturity has increased, portable devices have become smaller, more intelligent and ergonomic in design. Developments in plastics, gas sensor technology and the design of electronic components have helped evolve the portable monitor and this is a trend that is not likely to lose momentum.

Portable gas detection has come a very long way in the last 60 years and whatever the future holds for the industry, the outlook is good for those who will use the devices. The industry's continued evolution should deliver many more technological milestones in years to come, that will not only add value in multiple dimensions but also ensure the World's workers are safer than ever from the hazards of gas in the workplace.